

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

NXP USA, INC., and NXP B.V.,

Plaintiffs,

v.

IMPINJ, INC.,

Defendant.

CASE NO. 2:20-cv-01503-JHC

ORDER GRANTING MOTION FOR
PARTIAL SUMMARY JUDGMENT

I.

INTRODUCTION¹

Plaintiffs NXP USA, Inc. and NXP B.V. (collectively, “NXP”) brought this patent-infringement action against Defendant Impinj, Inc. alleging infringement of a group of patents relating to radio frequency identification (“RFID”) technology. Impinj moves for partial summary judgment as to three of these patents, which the parties collectively call the “wafer patents.” Dkt. ## 87 (redacted version of motion), 89 (sealed motion), 234 (supplemental brief).

¹ The Court previously filed a sealed version of this order. *See* Dkt. # 242. The Court then asked the parties to indicate which portions, if any, of the order must be redacted to protect confidential and proprietary business information. Dkt. # 243. After hearing from the parties, *see* Dkt. # 245, 246, the Court hereby publishes this redacted version of the order.

1 For the reasons below, the Court GRANTS Impinj's motion for partial summary
2 judgment.

3 II.

4 BACKGROUND

5 A. The Relevant Technology

6 RFID is a type of contactless wireless communication that uses electromagnetic
7 frequencies to transmit identification information. Dkt. # 216 at 7; *see generally* Dkt. # 220
8 (technology tutorial). RFID systems typically include a tag, which can be attached to an object,
9 and a reader, which receives information from the chip through radio waves. Dkt. # 216 at 7.
10 The RFID tag wirelessly transmits data to the RFID reader, which the reader can use to identify
11 the object. Dkt. # 220 at 7. A data carrier typically contains some form of electric circuit and a
12 means for transmitting the data to the communication station antenna. Dkt. # 216 at 7. ICs are
13 found not only in RFID products, but in nearly all electronic devices available today. Dkt. # 87
14 at 6. The ICs here are not manufactured (or "fabricated") individually, but in bulk on a "wafer."
15 Dkt. # 216 at 8.

16 A wafer is a disc made of a thin slice of silicon, typically 8 to 12 inches in diameter. Dkt.
17 ## 87 at 6; 220 at 14. During fabrication, the manufacturer takes a bare silicon wafer and runs it
18 through various machines that either deposit or remove material. Dkt. # 87 at 6. This addition
19 and removal of material produces layers on the wafer, which in turn produces the ICs. *Id.*; Dkt.
20 # 87-9 at 1. After ICs have been formed on the wafer, each IC is separated through a process
21 called "singulation" or "dicing." Dkt. # 87 at 6. During this process, the wafer—which contains
22 hundreds or thousands ICs—is cut apart to form individual ICs, which can then be incorporated
23 into RFID devices or other products.

24 B. The Patents at Issue

1 NXP’s complaint alleged that Impinj infringed eight patents, though the parties have
 2 since narrowed their dispute to six patents. Dkt. # 176 at 2 & n.1. This motion for partial
 3 summary judgment involves three² of those patents, collectively, the “wafer patents.” The three
 4 wafer patents are United States Patent Numbers 7,456,489 (“the ’489 Patent”), 7,538,444 (“the
 5 ’444 Patent”) and 8,415,769 (“the ’769 Patent”). Two of these patents—the ’489 and ’444
 6 Patents—relate to the layout of wafers. Both generally concern the arrangement of “control
 7 modules” and “exposure fields” on the wafers. Dkt. # 87 at 14–15, 8. The ’769 Patent concerns
 8 the “singulation” stage of the wafer-manufacturing process. The ’769 Patent describes the
 9 placement of “alignment marks” on a wafer, as well as a “method for separating integrated
 10 circuits on a wafer” using an alignment-detecting device and alignment marks. ’769 Patent,
 11 8:45–57; *id.* at 15–16.

12 C. TSMC and the NXP-TSMC Agreement

13 Taiwan Semiconductor Manufacturing Company Limited (“TSMC”) manufactures ICs,
 14 including the wafers on which ICs are formed. TSMC fabricates and sells wafers to Impinj.
 15 Dkt. ## 87 at 9; 87-9 at 2. TSMC describes itself as a “foundry.” *See* Dkt. # 1034 at 8 (quoting
 16 from TSMC’s website, which states that “TSMC pioneered the pure-place foundry business
 17 model and was founded in 1987, and has been the world’s largest dedicated semiconductor
 18 foundry ever since.”). Foundries make products based on the design specifications of their
 19 customers. *See Cyrix Corp. v. Intel Corp.*, 803 F. Supp. 1200, 1204 (E.D. Tex. 1992) (“Custom
 20 product manufacturing, which today is known as ‘foundry’ work, refers to arrangements in
 21
 22

23 ² Impinj’s initial motion sought summary judgment as to four, not three, patents. Since Impinj
 24 filed its motion, the parties have informed the Court that one of the patents, U.S. Patent No. 6,680,523, is
 no longer at issue. *See* Dkt. ## 216 at 7 n.2; 176 at 1–2 & n.1.

1 which a semiconductor company makes and sells to its customers integrated circuit products, the
2 designs for which were developed or owned by the customers.”).

3 In 2004, TSMC and Koninklijke Philips Electronics N.V. (“Philips”) executed a
4 Technology Cooperation Agreement (“licensing agreement”). *See* Dkt. # 89-2. The licensing
5 agreement was extended to NXP in 2006 when NXP was spun off from Philips. Dkt. # 89-3 at 3.
6 The licensing agreement grants TSMC:

7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 Dkt. # 89-2 at 5. In other words, [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED] All the patents at
15 issue were filed before this date.

16 D. Relationship between TSMC and Impinj

17 TSMC manufactured and sold all the accused wafers to Impinj during the pertinent
18 period. Dkt. ## 87 at 9; 87-9 at 2; 104 at 11. The parties agree that Impinj designed the ICs on
19 the wafers. Dkt. # 87 at 9. The parties dispute, however, how much Impinj was responsible for
20

21 ³ [REDACTED]
22 [REDACTED]
23 [REDACTED]
24 Dkt. # 89-2 at 5.

1 the design of the wafers themselves. TSMC asserts that Impinj was deeply involved in the wafer
2 design process, instructing NXP about the wafer arrangements that it desired. According to
3 NXP, Impinj’s involvement in this process means that TSMC did not sell Impinj the “product” of
4 a finished wafer. Dkt. # 99 at 16–19. Rather, it sold Impinj only “fabrication services” or
5 “manufacturing capacity.” *Id.* Impinj responds that TSMC, not Impinj, was mainly responsible
6 for wafer design, though Impinj’s position as to the degree of its involvement has not been
7 consistent throughout this case. *See* Dkt. ## 214 at 10–11; 216 at 10–11. Impinj nevertheless
8 argues that its involvement in the wafer design process is irrelevant. Dkt. ## 104 at 7–10; 228 at
9 6–10.

10 After TSMC produces the wafers, Impinj then relies on third-party vendors, like STARS
11 Microelectronics (Thailand) Public Company Limited (“STARS”), to singulate (or separate) the
12 individual ICs on the wafer. Dkt. # 87 at 9.

13 E. Procedural History

14 In March 2021, Impinj moved for partial summary judgment. Dkt. ## 87, 89. In its
15 motion, Impinj asserts that TSMC fabricates and sells to Impinj all the wafers accused of
16 infringement. According to Impinj, TSMC is licensed to make and sell products relying on the
17 wafer patents. And because TSMC has a license covering the wafer patents, Impinj says that
18 under the doctrine of “patent exhaustion,” its purchase of a licensed product cannot lead to
19 infringement liability. NXP opposed the summary judgment motion, arguing among other things
20 that Impinj failed to carry its burden to show that there are no genuine issues of material fact as
21 to every element of its patent exhaustion affirmative defense. Dkt. # 99.

22 Magistrate Judge S. Kate Vaughan recommended deferring ruling on the motion for
23 partial summary judgment to allow additional time for discovery. Dkt. # 126. The Court
24 adopted that recommendation. Dkt. # 133.

1 In May 2022, the case was reassigned to the undersigned judge. Dkt. # 175. The parties
2 filed supplemental briefs in September 2022, and the parties argued the partial summary
3 judgment motion at a hearing on October 4, 2022. Dkt. # 216 (NXP's supplemental brief); Dkt.
4 # 228 (Impinj's supplemental brief); Dkt. # 237.

5 III.

6 DISCUSSION

7 A. Summary Judgment Standard

8 A court may grant summary judgment if the movant shows that "there is no genuine
9 dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed.
10 R. Civ. P. 56(a). The evidence must be viewed in the light most favorable to the nonmoving
11 party, and all reasonable inferences therefore should be drawn in that party's favor. *Anderson v.*
12 *Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986). A court does not weigh evidence, but "only
13 determine[s] whether there is a genuine issue for trial." *Crane v. Conoco, Inc.*, 41 F.3d 547, 549
14 (9th Cir. 1994).

15 Impinj's motion for partial summary judgment is based on the doctrine of "patent
16 exhaustion," which is an affirmative defense to patent infringement. *Keurig, Inc. v. Sturm,*
17 *Foods, Inc.*, 732 F.3d 1370, 1373 (Fed. Cir. 2013). "[L]ike other issues in which there are no
18 disputed factual questions, [patent exhaustion] may be properly decided by summary judgment."
19 *Id.* "Where the moving party [as here] will have the burden of proof on an issue at trial, the
20 movant must affirmatively demonstrate that no reasonable trier of fact could find other than for
21 the moving party." *Soremekun v. Thrifty Payless, Inc.*, 509 F.3d 978, 984 (9th Cir. 2007).

22 B. Patent Exhaustion Analysis

23 Relying on patent exhaustion (also known as the "first sale" doctrine), Impinj says it is
24 entitled to partial summary judgment as to any infringement contentions relating to the wafer

1 patents because TSMC—the seller of the allegedly infringing wafer products—possesses a
2 license for those patents. *See generally* Dkt. ## 87, 104, 228. According to Impinj, TSMC had a
3 right to rely on this license to make and sell wafers to Impinj. Thus, Impinj asserts that NXP’s
4 patent rights were exhausted by TSMC’s sale of the wafers to Impinj, and that it has forfeited
5 any right to sue Impinj for infringement. For the reasons below, the Court agrees.

6 1. Patent Exhaustion Legal Standards

7 “The longstanding doctrine of patent exhaustion provides that the initial authorized sale
8 of a patented item terminates all patent rights to that item.” *Quanta Comp., Inc. v. LG Elec.,*
9 *Inc.*, 553 U.S. 617, 625 (2008); *LifeScan Scotland, Ltd. v. Shasta Techs., LLC*, 734 F.3d 1361,
10 1366 (Fed. Cir. 2013) (“[T]he Supreme Court had repeatedly held . . . that the sale of a patented
11 device exhausted the patent-holder’s right to exclude, and that an infringement suit would not lie
12 with respect to the subsequent sale or use of the device.”). “The rationale underlying the
13 doctrine rests upon the theory that an unconditional sale of a patented device exhausts the
14 patentee’s right to control the purchaser’s use of that item thereafter because the patentee has
15 bargained for and received full value for the goods.” *Keurig*, 732 F.3d at 1373.

16 In its most traditional form, patent exhaustion occurs when a patent holder directly
17 authorizes a “sale” of the allegedly infringing product. *Quanta*, 553 U.S. at 636 (“Exhaustion is
18 triggered only by a sale authorized by the patent holder.”). Once an authorized sale has
19 occurred, the patentee loses the right to assert infringement against the purchaser or any later
20 users.

21 But the doctrine applies equally when a patent holder provides a license to another party,
22 who—acting within the scope of the license—then sells the product to another. *Intel Corp. v.*
23 *ULSI Sys. Tech., Inc.*, 995 F.2d 1566, 1568 (Fed. Cir. 1993) (“This longstanding principle [of
24 patent exhaustion] applies similarly to a sale of a patented product manufactured by a licensee

1 acting within the scope of its license.”); *Cornell Rsch. Found., Inc. v. Hewlett-Packard Co.*, No.
 2 CIVA 501CV1974 NAM, 2007 WL 4349135, at *45 (N.D.N.Y. Jan. 31, 2007), *report and*
 3 *recommendation adopted sub nom. Cornell Univ. v. Hewlett-Packard Co.*, No. 01-CV-1974,
 4 2007 WL 2791120 (N.D.N.Y. Sept. 24, 2007) (“Patent exhaustion applies not only to a sale
 5 made by a patentee, but additionally to an unconditional sale to a third party by an authorized
 6 licensee.”); *Impression Products, Inc. v. Lexmark Intern., Inc.*, 137 S. Ct. 1523, 1535 (2017)
 7 (“So long as a licensee complies with the license when selling an item, the patentee has, in effect,
 8 authorized the sale.”). “Although under its most conventional model the patent exhaustion
 9 defense has applicability in a case which involves an authorized ‘first sale’ by a licensee to an
 10 unlicensed third-party, its reach is more expansive, covering any authorized transaction,
 11 regardless of how it is structured, where ‘it may fairly be said that the patentee has received his
 12 reward for the use of the article.’” *Cornell*, 2007 WL 4349135, at *54 (quoting *United States v.*
 13 *Masonite Corp.*, 316 U.S. 265, 277–78 (1942)).

14 In *Quanta Computer v. LG Electronics*, for example, “LGE licensed Intel to practice any
 15 of its patents and to sell products practicing those patents,” and “[n]othing in the License
 16 Agreement limited Intel’s ability to sell its products practicing the LGE Patents.” 553 U.S. at
 17 638. The Court held that “Intel’s authorized sale to Quanta thus took its products outside the
 18 scope of the patent monopoly, and as a result, LGE can no longer assert its patent rights against
 19 Quanta.” *Id.*

20 Finally, a sale will not exhaust the patentee’s rights unless the product sold “substantially
 21 embodies” the patent. *Quanta*, 553 U.S. at 638. “‘Substantial embodiment’ is established if (1)
 22 the only reasonable and intended use of the article is to practice the allegedly exhausted patent;
 23 and (2) the article embodies the essential or inventive features of the allegedly exhausted patent.
 24 *JVC Kenwood Corp. v. Nero, Inc.*, 797 F.3d 1039, 1046 (Fed. Cir. 2015) (citing *id.* at 631).

2. Authorized “Sale”

Patent exhaustion occurs only when there is an “authorized sale.” *See Quanta*, 553 U.S. at 625 (“[T]he initial *authorized sale* of a patented item terminates all patent rights to that item.” (emphasis added)); *ULSI*, 995 F.2d at 1568 (“The law is well settled that an *authorized sale* of a patented product places that product beyond the reach of the patent.” (emphasis added)). The central dispute concerns whether the transactions in which TSMC sold wafers to Impinj constitute “sales” for purposes of patent exhaustion. *See Cornell*, 2007 WL 4349135, at *54 (noting that the “lynchpin issue presented” was whether the transaction could “fairly be characterized as a sale”).

NXP asserts that there remains a genuine dispute of material fact as to whether TSMC sold Impinj a *product* or whether TSMC merely sold Impinj “*fabrication services*.” Dkt. ## 99 at 15–19; 216 at 16–22. NXP concedes that if TSMC sold Impinj a product, Impinj would satisfy this element of patent exhaustion. Dkt. # 99 at 15. By contrast, however, NXP says that if TSMC only sold Impinj fabrication services or manufacturing capacity—as it believes to be true—then the transactions between TSMC and Impinj would not qualify as authorized sales for purposes of patent exhaustion, allowing NXP to assert infringement against Impinj.

To support this argument, NXP points to Impinj’s extensive involvement in the wafer design and manufacturing process. According to NXP, Impinj not only designed the ICs for the accused wafers (which Impinj does not dispute, *see* Dkt. # 87 at 5), but also “did most, if not all, of the wafer layout design and made other critical design decisions, including where to place testlines and alignment marks.” Dkt. # 96 at 20. The wafers were not, NXP says, “available off the shelf.” Dkt. # 214 at 19–20. Rather, they were “ta[i]lor made” for Impinj; Impinj instructed TSMC about the placement of control modules and had “final sign off” before production. *Id.* An email from Impinj to NXP stated that Impinj wanted to “compose the reticle [itself]” so that

1 it could “make the best placement of these cells that is compatible [for its] post processing
2 needs.” Dkt. ## 89-6 at 25–26; 96 at 17. And TSMC once stated that it was asking an engineer
3 “to prepare for [Impinj’s] special layout.” Dkt. # 98-9 at 18.

4 NXP also cites various presentations and communications in which TSMC identifies
5 itself as providing “manufacturing services” or “fabrication services.” Dkt. # 214 at 21–22. For
6 example, the TSMC Master Technology Usage Agreement between TSMC and Impinj describes
7 TSMC as providing “fabrication services.” Dkt. # 215-18 at 30. And a 2019 presentation
8 describes customers like Impinj as responsible for the design of the chips that are produced using
9 TSMC’s “Manufacturing Services.” Dkt. ## 215-19 at 3; 214 at 22.

10 NXP concludes that because Impinj was heavily involved in the design of the wafers that
11 TSMC ultimately produced, TSMC did not sell Impinj a product, but sold Impinj only
12 fabrication services. And because TSMC sold Impinj only fabrication services, NXP says, there
13 was no authorized “sale” of a product to trigger patent exhaustion. This conclusion is reinforced
14 by the numerous instances in which TSMC describes itself as providing manufacturing or
15 fabrication services.

16 NXP’s argument does not persuade the Court. Patent exhaustion applies even when an
17 unlicensed third-party like Impinj is heavily involved in the design and arrangement of the
18 product made by the licensed manufacturer. Involvement in the design process does not convert
19 what otherwise appears to be an authorized sale of a product (the wafer) into a sale of only
20 fabrication services or manufacturing capacity. Both the Federal Circuit and several district
21 courts have recognized that a transaction of this nature—in which a licensed manufacturer makes
22 products under the design specifications of an unlicensed party—constitutes an authorized sale
23 that exhausts the patentee’s right to enforce the patent.

1 In *Intel Corp. v. ULSI System Technology*, the Federal Circuit rejected a near carbon copy
2 of NXP's argument. 995 F.2d 1566 (Fed. Cir. 1993). In that case, Intel licensed all its patents to
3 Hewlett-Packard ("HP"). *Id.* at 1567. The defendant, ULSI, "supplied HP with proprietary
4 design specifications," which HP used to "manufacture[] and ship[] completed coprocessor chips
5 to ULSI, which resold them as ULSI products." *Id.* This, the court said, was "apparently
6 common" for "foundry" arrangements within the semiconductor industry. *Id.* Intel then sued
7 ULSI for infringement. ULSI responded that the licensing agreement authorized HP to make
8 and sell the allegedly infringing product, and that HP's sale of the product to ULSI served as a
9 "first sale" that "extinguished Intel's patent rights." *Id.* at 1568.

10 Like NXP, Intel argued that "what was actually sold by HP under the foundry agreement
11 was its fabrication *services* with an ancillary sale of wafers and chemicals," and as a result, "no
12 sale ever took place that could support ULSI's 'first sale' defense." *Id.* at 1569 (emphasis in
13 original). The Federal Circuit held that this was "incorrect," squarely rejecting the notion that
14 involvement in the design process transforms a transaction from a sale of product into a sale of
15 services. *Id.* The court stated:

16 Intel makes much of the fact that the 'C87 chip was based on a design provided by ULSI.
17 Intel confuses the issue of design origin with the issue of sale. Who designed the chip
18 and whether it embodies inventions other than Intel's have no bearing on the controlling
issue whether the [accused products] were sold by HP to ULSI and thus extinguish Intel's
patent rights relating to those products.

19 *Id.* Thus, a sale from a licensee to an unlicensed party still serves as a "sale" for purposes of
20 patent exhaustion, *even if* the unlicensed party is deeply involved in the design process.

21 District courts applying *ULSI* have come to the same conclusion, holding that patent
22 exhaustion applies in "foundry cases" in which a customer provides the design for the product.
23 *See, e.g., Cornell*, 2007 WL 4349135, at *54 (observing that patent exhaustion applies when "an
24 unlicensed third-party provides designs to a licensee and requests that the authorized party utilize

1 its rights to make and to sell the product to the unlicensed third-party, who then resells the
2 product to its customers”); *Intel Corp. v. Broadcom Corp.*, 173 F. Supp. 2d 201, 229 (D. Del.
3 2001) (“[T]he unlicensed third party can give its designs to a licensee and ask that licensee to use
4 its rights ‘to make’ and ‘to sell’ under its license to manufacture the product for the third party
5 (i.e. to act as a foundry for the unlicensed third party), who then resells that product to its
6 customers. The Federal Circuit has held that because the products were made and sold by a
7 licensed party, the licensor/patent owner cannot sue the third party for infringement.”).

8 Applied here, the wafer transactions between TSMC and Impinj remain “sales” for
9 purposes of patent exhaustion even if Impinj were heavily involved in the wafer design process.
10 Like other foundries, TSMC receives design input from clients like Impinj. But as the Federal
11 Circuit concluded in *ULSI*, this does not mean that TSMC sold merely fabrication services.
12 Rather, TSMC used the broad rights afforded to it by the license to make products—albeit with
13 Impinj’s input—and sell them to customers in reliance on the wafer patents. TSMC was well
14 within its rights under the licensing agreement to do so. *Cf. Quanta*, 553 U.S. at 637 (noting that
15 the licensing agreement “authorized Intel to sell products that practiced the [asserted patents].
16 No conditions limited Intel’s authority to sell products substantially embodying the patents.”);
17 *Tessera, Inc. v. Int’l Trade Comm’n*, 646 F.3d 1357, 1370 (Fed. Cir. 2011) (“Nothing in the TCC
18 Licenses limited the licensee’s ability to sell the accused product.”).

19 NXP reads *ULSI* and *Cornell* to create a firm distinction between the sale of products and
20 the sale of fabrication services. But it is far from clear that the Federal Circuit expressly
21 recognizes the kind of bright-line rule advanced by NXP, or that it would be possible to apply
22 such a distinction in practice. After all, if a manufacturer sells a product, it would *always* be
23 possible to recharacterize the sale of the product as merely a sale of the services used to create
24 that product.

1 In any event, what is clear from *ULSI* is that, however characterized, a foundry
2 relationship in which a customer provides designs to a licensed manufacturer who then sells the
3 product to the customer satisfies the “sale” element of patent exhaustion. Whether this is labeled
4 as a sale of “fabrication services” or a sale of a product is irrelevant. Characterized in either
5 fashion, the result is the same: The Federal Circuit has blessed precisely this type of relationship.
6 It does not matter, then, that TSMC described itself as providing manufacturing or fabrication
7 services in presentations and communications. *See* Dkt. ## 214 at 21–22; 216 at 21–22 (NXP
8 arguing that TSMC’s self-characterization as providing manufacturing or fabrication services
9 creates a genuine dispute of fact as to whether the TSMC-Impinj transaction was a sale). Nor
10 does it matter whether Impinj provided guidance—even very specific guidance—to TSMC about
11 the products that it wished to purchase. Because of its license, TSMC had a right to sell wafers
12 that use the patents at issue, even if such wafers were the result of “fabrication services,” and
13 even if such wafers were designed in substantial part by Impinj.

14 The record evidence also makes clear that TSMC sold Impinj a product (wafers), not
15 mere manufacturing capacity. A sample purchase order lists a price per wafer and requests a
16 certain quantity of wafers; it does not, for example, list a price per hour, or a price per service.
17 Dkt. # 103-5 at 2. Declarations by Impinj employees state that the accused wafers have “always
18 been fabricated *and sold* to Impinj by Taiwan Semiconductor Manufacturing Co. (‘TSMC’).”
19 Dkt. # 87-9 at 1 (emphasis added); *see also* Dkt. # 87-13 at 1. At the end of each transaction,
20 TSMC manufactures a wafer and then provides it to Impinj; TSMC does not merely offer Impinj
21 the opportunity to use its factories.

22 NXP responds that the existence of purchase orders and other indicia of a product sale do
23 not suffice to carry Impinj’s burden at summary judgment. NXP cites the *Cornell* decision, in
24 which the court denied a summary judgment motion “notwithstanding the issuance of purchase

1 orders and invoices” because “a reasonable factfinder could conclude that HP was purchasing
2 mere manufacturing capacity, and at all times retained title to the chips being fabricated by
3 Intel.” 2007 WL 4349135, at *55.

4 But in *Cornell*, there were facts suggesting “that all that was provided by Intel to HP was
5 manufacturing capacity and that there was no sale of processors by Intel to HP, as distinct from
6 the use by HP of Intel’s facilities.” *Id.* at *56. For example, an Intel employee testified that the
7 agreements between the parties “provided HP with an ability to manufacture products in Intel
8 manufacturing facilities.” *Id.* The agreements also expressly stated that Intel would provide
9 “manufacturing capacity” to HP. *Id.* at *55. Read in the light most favorable to the nonmoving
10 party, the evidence in *Cornell* could at least arguably be construed to suggest that Intel sold HP
11 only the right to manufacture products in Intel’s facilities.⁴

12 By contrast, no evidence here suggests that Impinj purchased only the right to use
13 TSMC’s facilities and machinery to manufacture the accused wafers itself. TSMC was
14 responsible for manufacturing the accused wafers, using designs provided in part by Impinj.
15 There is no evidence that Impinj employees themselves manufactured the products, or otherwise
16 sought only to use TSMC’s physical infrastructure or manufacturing capacity. Without contrary
17 evidence, the purchase orders—combined with TSMC’s role in the manufacturing process and
18 the fact that the result of each transaction was the delivery of a wafer product from NXP to
19 Impinj—provide strong evidence that the transactions were sales of wafer products. And again,
20 because the sale of a product by a manufacturer can always be recharacterized as the sale of
21 services used to make that product, the fact that TSMC provided Impinj “fabrication services”
22 does not alter the analysis.

23
24 ⁴ Even if not distinguishable, the Court notes that *Cornell* is not binding authority.

1 This conclusion is reinforced by the licensing agreement itself and the nature of TSMC's
2 business. The licensing agreement does not restrict TSMC's patent rights to only allow TSMC
3 to sell products designed by TSMC; it authorizes TSMC to make or sell any products using the
4 patents, regardless of the source of the design. Dkt. ## 103-3 at 8; 89-2 at 5. The licensing
5 agreement expressly recognizes that TSMC manufactures ICs [REDACTED]
6 [REDACTED] Dkt. # 89-2 at 3. An interpretation of the
7 licensing agreement that would prevent TSMC from selling products designed by its
8 customers—a defining characteristic of its business model as a “foundry”—would render the
9 licensing agreement meaningless.

10 At bottom, NXP's corporate predecessor, Philips, gave TSMC this license, presumably in
11 exchange for consideration it considered adequate. TSMC may rely on that license to make and
12 sell wafers. *See ULSI*, 995 F.2d at 1569 (“While Intel may not in retrospect be pleased with the
13 deal that it made permitting HP to make unrestricted sales, it nevertheless granted HP that right
14 in 1983, presumably for consideration it believed to be of value at that time. It cannot now
15 renege on that grant to avoid its consequences.”). Allowing TSMC to assert infringement against
16 Impinj would circumvent the “rationale” of the patent exhaustion doctrine, which exhausts a
17 patent holder's rights once he or she has “bargained for and received full value for the goods.”
18 *Keurig*, 732 F.3d at 1373. As the Supreme Court has explained, “the purpose of the patent law is
19 fulfilled . . . when the patentee has received his reward for the use of his invention.” *Impression*
20 *Prod.*, 137 S. Ct. at 1523 (citation and quotation marks omitted).

21 TSMC's licensed sale of wafers to Impinj constitutes an “authorized sale” for purposes of
22 patent exhaustion.

3. Scope of License/“Authorization”

Patent exhaustion occurs only when there is an *authorized* sale. For a sale by a licensee, this requires that the sale be made by “a licensee *acting within the scope of its license*” *ULSI*, 995 F.2d at 1568 (emphasis added). The Supreme Court has explained:

So long as a licensee complies with the license when selling an item, the patentee has, in effect, authorized the sale. That licensee’s sale is treated, for purposes of patent exhaustion, as if the patentee made the sale itself. The result: The sale exhausts the patentee’s rights in that item.

Impression Prod., 137 S. Ct. at 1535. But if a licensee acts beyond the scope of the license, the patentee’s rights are not exhausted, as there has been no *authorized* sale. *Id.* NXP asserts that there is a genuine question as to whether all the infringing activity fell “within the scope of the NXP-TSMC license.” Dkt. # 99 at 19–22; *see also* Dkt. # 216 at 22–23. The Court disagrees.

To begin, there can be no reasonable dispute that *TSMC*’s own actions fell within the scope of the license. *See* Dkt. # 104 at 11. The license granted *TSMC* unconditional rights to make and sell products using the wafer patents. *See* Dkt. # 89-2 at 5 [REDACTED]

[REDACTED]. Nor does NXP appear to dispute that the patents at issue are “Process and Structural Patents” that are covered by the license agreement. *TSMC* did not act beyond the scope of its license because that license grants *TSMC* broad rights to use the wafer patents and sell products that rely on those patents. *Cf. Impression Prod.*, 137 S. Ct. at 1535; *Quanta*, 553 U.S. at 637–38.

Instead, NXP appears to argue that *TSMC* acted outside the scope of the license by allowing other parties—including *Impinj* and its post-fabrication vendors—to practice several of the elements in the claims. *See* Dkt. # 99 at 20–21; Dkt. # 216 at 22 (“*Impinj* has failed to meet its burden to show that all infringing activity occurred solely by *TSMC*.”). NXP’s argument can

1 be divided into two parts: (1) arguments about pre-fabrication claim elements (that is, claim
2 elements that are practiced before the wafers leave the TSMC facilities), and (2) arguments about
3 post-fabrication claim elements (that is, claim elements that are allegedly practiced by third-party
4 vendors after TSMC manufactures the wafers).

5 a. Pre-Fabrication Activity

6 NXP argues that TSMC itself must practice certain claim elements before and during the
7 wafer production process; but TSMC allowed an unlicensed party—Impinj—to execute those
8 elements of the claims. Dkt. ## 99 at 19–21; 216 at 22–23.

9 In support of this argument, NXP observes that several of the patent claims include
10 limitations that call for the “design” and “arrangement” of components on the wafer. Dkt. # 99
11 at 19–20. For example, claim one of the ’444 Patent states that “each exposure field is *designed*
12 rectangular,” and claim one of the ’769 Patent requires “a plurality of alignment marks
13 configured and *arranged* to align a separating device for separating the integrated circuits on the
14 wafer into individual integrated circuits during a separation step.” ’444 Patent, at 6:45–46
15 (emphasis added); ’769 Patent, at 7:63–66 (emphasis added). NXP argues that because Impinj
16 participated in the design and layout of the wafer, TSMC did not actually practice the claim
17 elements that require certain components be “designed” or “arranged” in a particular way. *See*
18 Dkt. ## 99 at 19–21; 216 at 23. Rather, NXP says that it was Impinj—not TSMC—that
19 practiced those claim elements by designing and arranging the wafers to its own specifications.
20 Dkt. # 216 at 23 (“Impinj’s involvement in the claimed ‘designed’ and ‘arranged’ limitations
21 takes its activity outside the scope of the TSMC license.”); *see also id.* (“Impinj performed most,
22 if not all, wafer layout design, and also made other critical design decisions.”). NXP says that by
23 allowing an unlicensed party to design and arrange the wafers, TSMC did not practice the claim
24 elements itself, taking its actions outside the scope of the license.

1 But the phrases in the claims referencing “design[ing]” and “arrang[ing]” are not steps in
2 a method claim. These words describe the structure of the wafer, not a step to be completed by
3 the practitioner of the invention. The Federal Circuit has interpreted phrases of this nature to
4 roughly mean “capable of” and similar phrases like “made to.” *In re Chudik*, 851 F.3d 1365,
5 1373 n.3 (Fed. Cir. 2017) (“We assume . . . that ‘arranged to’ is analogous to ‘adapted to,’ which
6 means ‘made to,’ ‘designed to,’ or ‘configured to.’ ‘Adapted to’ occasionally has a broader
7 meaning of ‘capable of’ or ‘suitable for.’” (citation omitted)); *Aspex Eyewear, Inc. v. Marchon*
8 *Eyewear, Inc.*, 672 F.3d 1335, 1348–49 (Fed. Cir. 2012) (“‘[A]dapted to’ is frequently used to
9 mean ‘made to,’ ‘designed to,’ or ‘configured to,’ but it can also be used in a broader sense to
10 mean ‘capable of’ or ‘suitable for.’”).

11 The claim limitation referencing the “arrange[ment]” of alignment marks does not require
12 that TSMC do the arranging; it simply requires that the wafer be arranged (that is, made or
13 constructed) in a way that enables alignment of a separating device during the later singulation
14 phase. Similarly, the claim limitation that “each exposure field is designed rectangular” does not
15 require TSMC to carry out the step of *designing* the exposure field to be rectangular. It requires
16 only that the exposure field *is* rectangular. The same is true for the other pre-fabrication claim
17 limitations identified by NXP. Dkt. # 99 at 19–20. These are not method steps that the licensee
18 needed to perform itself.

19 Thus, even if Impinj were extensively involved in the “design” and “arrangement”
20 process, TSMC did not act outside the scope of its license. Because of its license, TSMC had a
21 right to make and sell wafers in reliance on the wafer patents. It does not matter whether TSMC
22 or Impinj designed or arranged certain features.

b. Post-Fabrication Activity

NXP makes a similar argument for several claim elements directed to activity after fabrication. Dkt. # 99 at 20–22. For example, claims 11 and 12 of the '769 Patent are method claims “for separating integrated circuits on a wafer,” which use “alignment marks” placed on the wafer, a light shining through the bottom of the wafer, and an alignment-detecting device. '769 Patent, 8:45–67.

It is undisputed that TSMC does not conduct the separation of wafers for Impinj. Instead, Impinj relies on third-party vendors like STARS to singulate the ICs. NXP appears to argue that because these third-party vendors do not have a license to practice the '769 Patent, Impinj is not shielded from liability by TSMC's license and the doctrine of patent exhaustion. *See ULSI*, 995 F.2d at 1568 (noting that patent exhaustion applies when “a sale of a patented product manufactured by a licensee *acting within the scope of its license*” (emphasis added)).

In its reply brief, Impinj responds that the basis for summary judgment as to these post-fabrication claims does not depend on TSMC's license or patent exhaustion. Rather, Impinj states that STARS does not, in fact, use the alignment mark-based methods described in the '769 Patent, and thus does not infringe the '769 Patent's method claims. *See* Dkt. # 104 at 13 & n.8 (“Impinj's motion on these two claims is based on the fact that NXP cannot meet its burden of proving infringement” because “there is no subsequent infringement” after the wafers leave TSMC's facilities). This, Impinj says, relieves it of any potential liability as the purchaser of the singulated wafers. *Id.*

STARS has served as Impinj's singulation vendor since 2014. Dkt. ## 87-13 at 1; 104 at 13. Impinj submitted a declaration stating that “STARS, Impinj's singulation vendor, does not use any alignment marks in the singulation process.” Dkt. # 87-13 at 2. Instead, STARS uses “circuit structures”—not “alignment marks”—to singulate the wafers. *Id.* NXP has offered no

1 evidence disputing this contention. Despite having the chance to do so in its supplemental brief,
2 NXP does not dispute Impinj’s factual assertion, nor does its supplemental brief discuss the
3 issue. NXP identifies no post-fabrication vendor that uses the methods described in the ’769
4 Patent. Because it is apparently undisputed that no Impinj singulation vendor relies on the
5 alignment mark-based methods described in the ’769 Patent, and thus does not infringe the
6 method claims in the ’769 Patent, Impinj is entitled to summary judgment.

7 4. “Substantial Embodiment”

8 Patent exhaustion applies only when the product sold “substantially embodies” the patent.
9 *Quanta*, 553 U.S. at 638. “‘Substantial embodiment’ is established if (1) the only reasonable and
10 intended use of the article is to practice the allegedly exhausted patent; and (2) the article
11 embodies the essential or inventive features of the allegedly exhausted patent. *JVC Kenwood*,
12 797 F.3d at 1046 (citing *id.* at 631). The Supreme Court summarized the inquiry as directed to
13 whether the product sold “had no reasonable noninfringing use and included all the inventive
14 aspects of the patented methods.” *Quanta*, 553 U.S. at 638. The Federal Circuit has clarified
15 that “the critical issue, whether a method or product patent is involved, is whether the product
16 ‘substantially embodies the patent’—i.e., whether the additional steps needed to complete the
17 invention from the product are themselves ‘inventive’ or ‘noninventive.’” *LifeScan Scotland*,
18 734 F.3d at 1368 (quoting *Quanta*, 553 U.S. at 633–64).

19 NXP argues that Impinj has not satisfied its burden to show that the wafers sold by
20 TSMC substantially embody the patents at issue. Dkt. # 99 at 22–25. According to NXP,
21 questions of fact remain because third-party vendors process the wafers after they leave TSMC
22 facilities, and thus might practice some of the claim elements. Thus, it contends that Impinj must
23 show that the post-fabrication steps are “common and noninventive” and that the wafers embody
24

1 all the essential or inventive features of the patents when they leave TSMC's possession. *Id.* at
2 24 (citing *Quanta*, 553 U.S. at 634); *JVC Kenwood*, 797 F.3d at 1046.

3 This argument makes little sense as to the '444 and '489 patents. These patents concern
4 the design and arrangement of the wafers, such as the placement of various control modules.
5 They do not concern post-fabrication finishing steps. There is no genuine dispute of fact that
6 TSMC was responsible for arranging the wafers (with input from Impinj), and that third-party
7 processing vendors did not alter the design and arrangement of these wafer features after
8 fabrication. After the wafers left TSMC facilities, no additional steps were necessary to finish
9 the product in accordance with the patents. The wafers fully "embodie[d] the essential or
10 inventive features of the allegedly exhausted patent[s]." *JVC Kenwood*, 797 F.3d at 1046.

11 The argument similarly fails for the '769 Patent. As discussed above, the '769 Patent
12 includes method claims "for separating integrated circuits on a wafer" using an alignment-
13 detecting device and "alignment marks" placed on the wafer. '769 Patent, 8:45–57. According
14 to NXP, the '769 Patent claims a particular method of singulation; but there are many ways to
15 singulate a wafer. NXP therefore says that the sale of wafers did not trigger patent exhaustion
16 because the wafers did not include all the inventive aspects of the '769 Patent at the time of sale
17 and because the singulation methods described by the '769 Patent were not the "only reasonable
18 and intended" manner of singulating the wafers. Dkt. # 99 at 23–24.

19 But as discussed above, Impinj's argument as to the '769 Patent's method claims is based
20 not on patent exhaustion, but on non-infringement. Impinj has offered un rebutted evidence that
21 its singulation vendor does not use the alignment-mark method of singulation described in the
22 '769 Patent. NXP has identified no singulation vendor that relies on the methods of the '769
23 Patent. Therefore, it does not matter that the wafers did not embody all inventive elements of the
24 '769 Patent when they left TSMC facilities. Because there is no evidence that any singulation

1 vendor infringed the '769 Patent, Impinj is entitled to summary judgment on this claim
2 regardless of whether the wafers substantially embodied the '769 Patent when TSMC delivered
3 them to Impinj.

4 C. Whether the Monza R6 Product is Representative

5 NXP argues that summary judgment should be denied because the motion does not
6 address all the accused products. Dkt. # 99 at 13–14. NXP alleged that 19 of Impinj's products
7 infringe its patents, but Impinj's initial motion discusses only one: the Monza R6. *Id.* NXP says
8 that Impinj's motion ignores the remaining 18 accused products. *Id.* And because the motion
9 presents no evidence or argument about those 18 other products, NXP urges the Court to deny
10 the motion as premature and wasteful. *Id.* at 14.

11 This is not persuasive. First, TSMC produces and sells to Impinj wafers for all the
12 accused products, not just the Monza R6 product. Dkt. # 104 at 11. Therefore, the same license
13 that authorizes TSMC's production of the Monza R6 product also authorizes its role in the
14 production of the other 18 accused products.

15 Second, NXP based its infringement contentions on the Monza R6 product alone, which
16 NXP claimed was "representative" of all other accused products. *See* Dkt. # 101-9 at 6–7
17 ("[T]he semiconductor wafers bearing Monza 6 series RFID tag chips appear to be representative
18 of all Accused Devices . . . for purposes of assessing infringement of the asserted claims of the
19 '489 Scheucher and '769 Scheucher patents."); *id.* at 10 ("[T]he Monza R6 is representative of
20 all the Accused Devices at least as to wafer layout and singulation methods."). NXP's
21 infringement contentions show that there are no differences between the accused products that
22 would affect the Court's analysis. Accordingly, the Court construes Impinj's motion as directed
23 to all accused products, not just the Monza R6 product.

1 D. Discovery Issues/Rule 56(d)

2 NXP complains that Impinj impeded the discovery process. In its initial brief, for
3 example, NXP complained that Impinj failed to produce contracts between Impinj and TSMC, as
4 well as “design rules” for the production of wafers. Dkt. # 99 at 8–9. NXP asked the Court to
5 defer ruling on Impinj’s motion based on Federal Rule of Civil Procedure 56(d) in order to allow
6 additional time for discovery, which the Court granted. *Id.* at 26–29; Dkt. ## 126; 133.

7 In its supplemental brief NXP continues to complain of Impinj’s discovery obstruction.
8 Dkt. # 216 at 10–13. But despite these discovery-related complaints, NXP’s supplemental brief
9 does not request a Rule 56(d) continuance, and NXP confirmed at the summary judgment
10 hearing that it was not seeking a Rule 56(d) continuance.

11 These discovery issues do not justify denial of Impinj’s motion. First, NXP had ample
12 time to conduct discovery. If NXP believed that it was missing documents due to Impinj’s
13 inadequate discovery responses, NXP could have moved to compel or another discovery-related
14 motion. Indeed, the Court granted several of NXP’s discovery requests to help fill in any
15 purported evidentiary gaps. *See, e.g.*, Dkt. # 181 (granting NXP’s motion for the issuance of
16 letters rogatory to STARS). NXP cannot now rely on the lack of documents based on discovery
17 complaints to establish a genuine dispute of material fact necessary to defeat Impinj’s partial
18 summary judgment motion. Second, many of the allegedly missing documents are irrelevant to
19 the summary judgment motion. For example, documents addressing which party designed the
20 wafers would not defeat Impinj’s motion: The Federal Circuit has stated that foundry
21 relationships in which a customer designs the product can provide the “sale” necessary to trigger
22 patent exhaustion.

1 **IV.**

2 **CONCLUSION**

3 For the reasons discussed above, the Court GRANTS Impinj's motion for partial
4 summary judgment (Dkt. ## 87, 89).

5 Dated this 4th day of November, 2022.

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7 John H. Chun
8 United States District Judge
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